

No. 666,985.

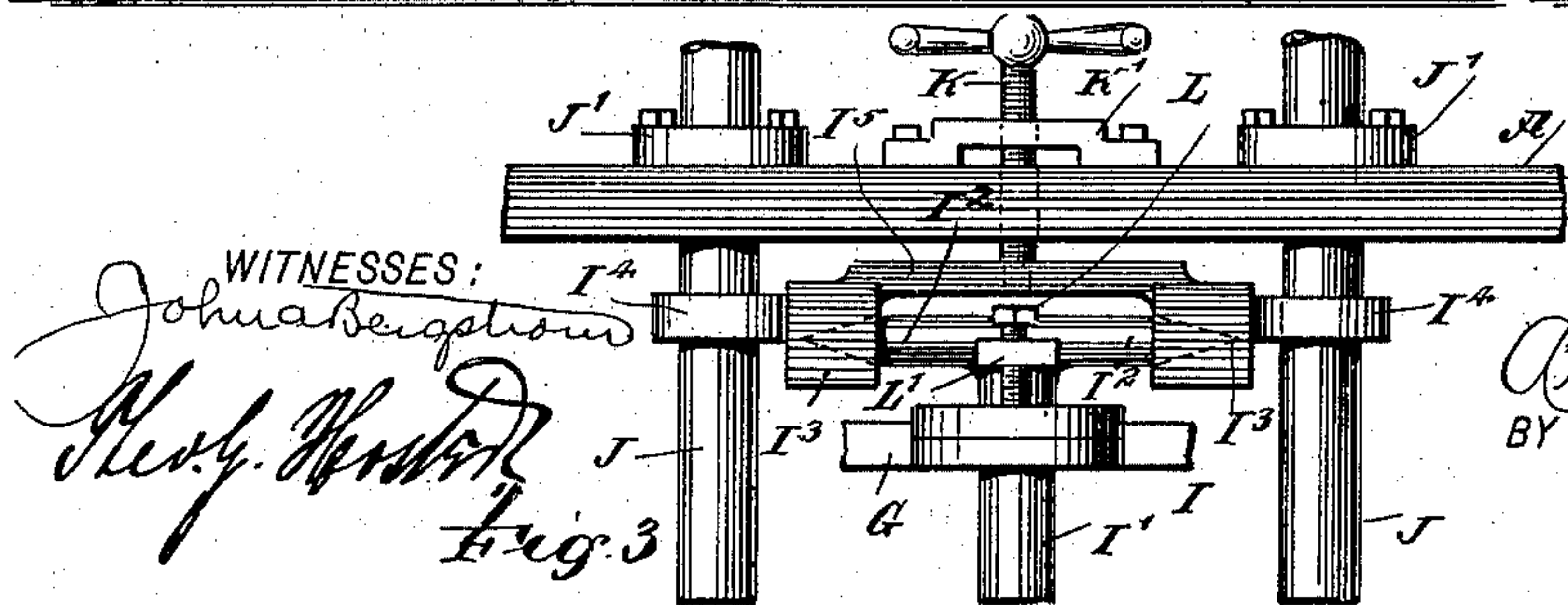
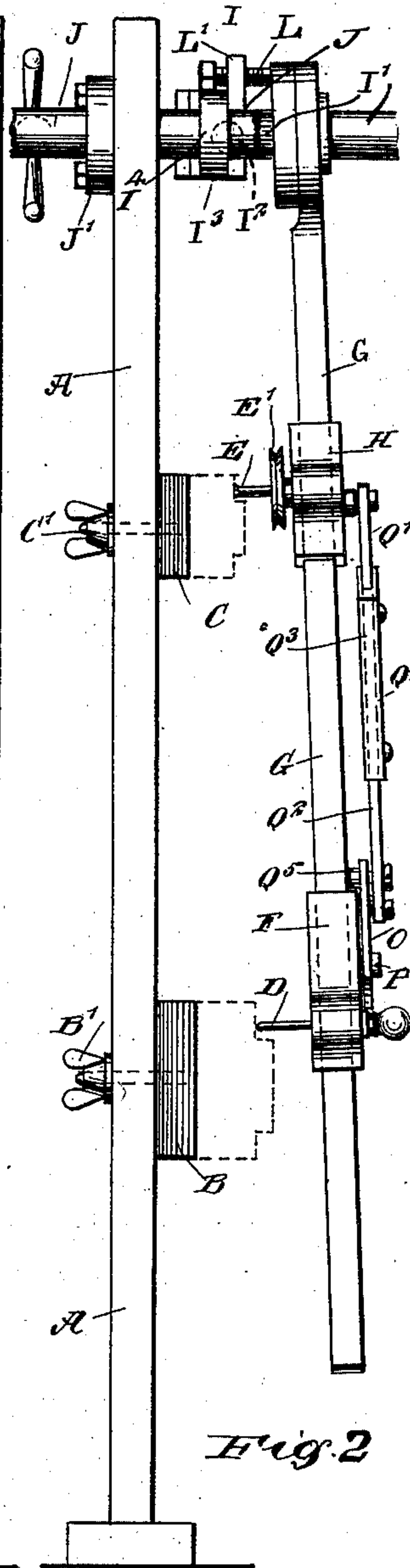
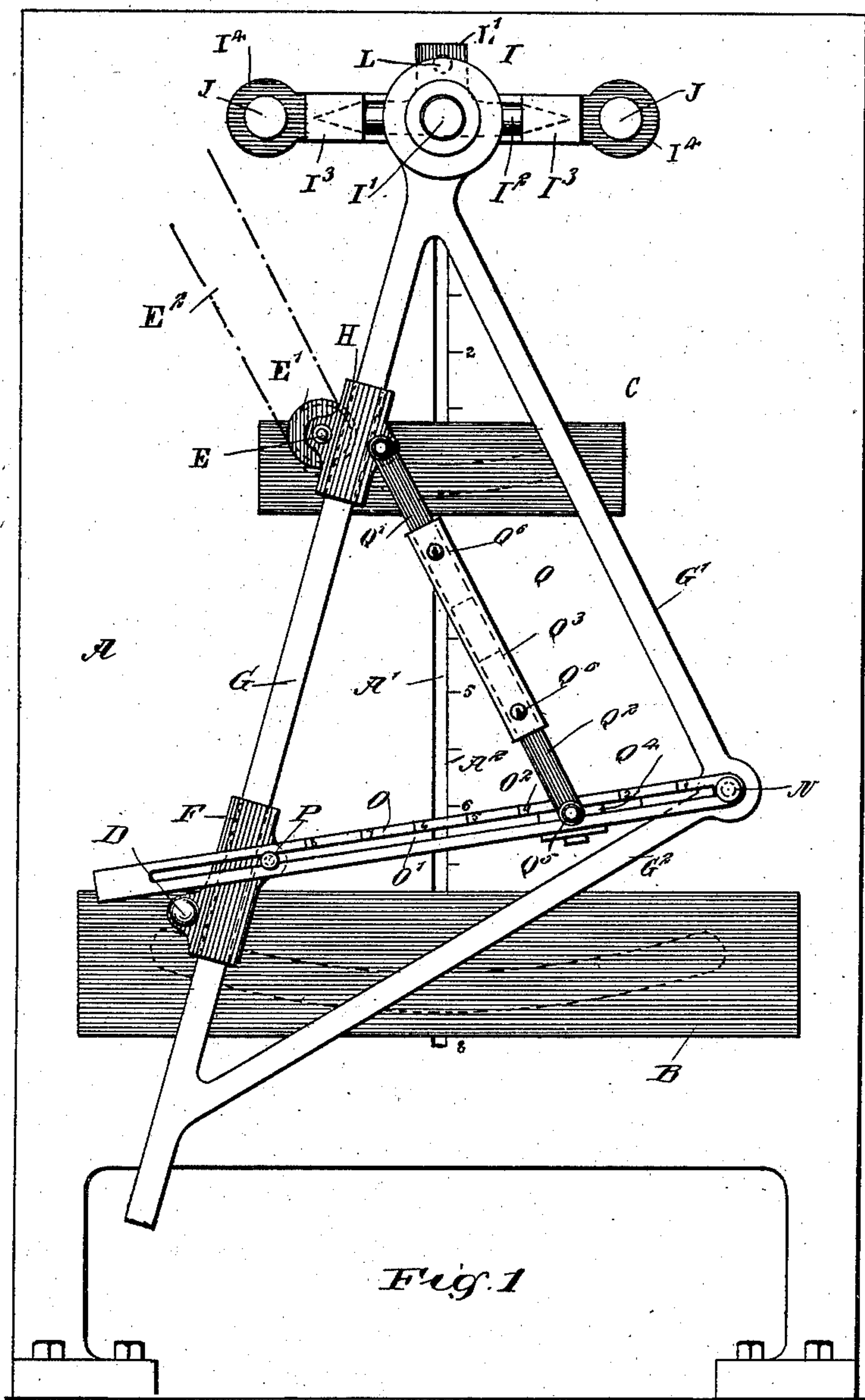
Patented Jan. 29, 1901.

A. STIRIA.
CARVING AND ENGRAVING MACHINE.

(Application filed Mar. 8, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 3

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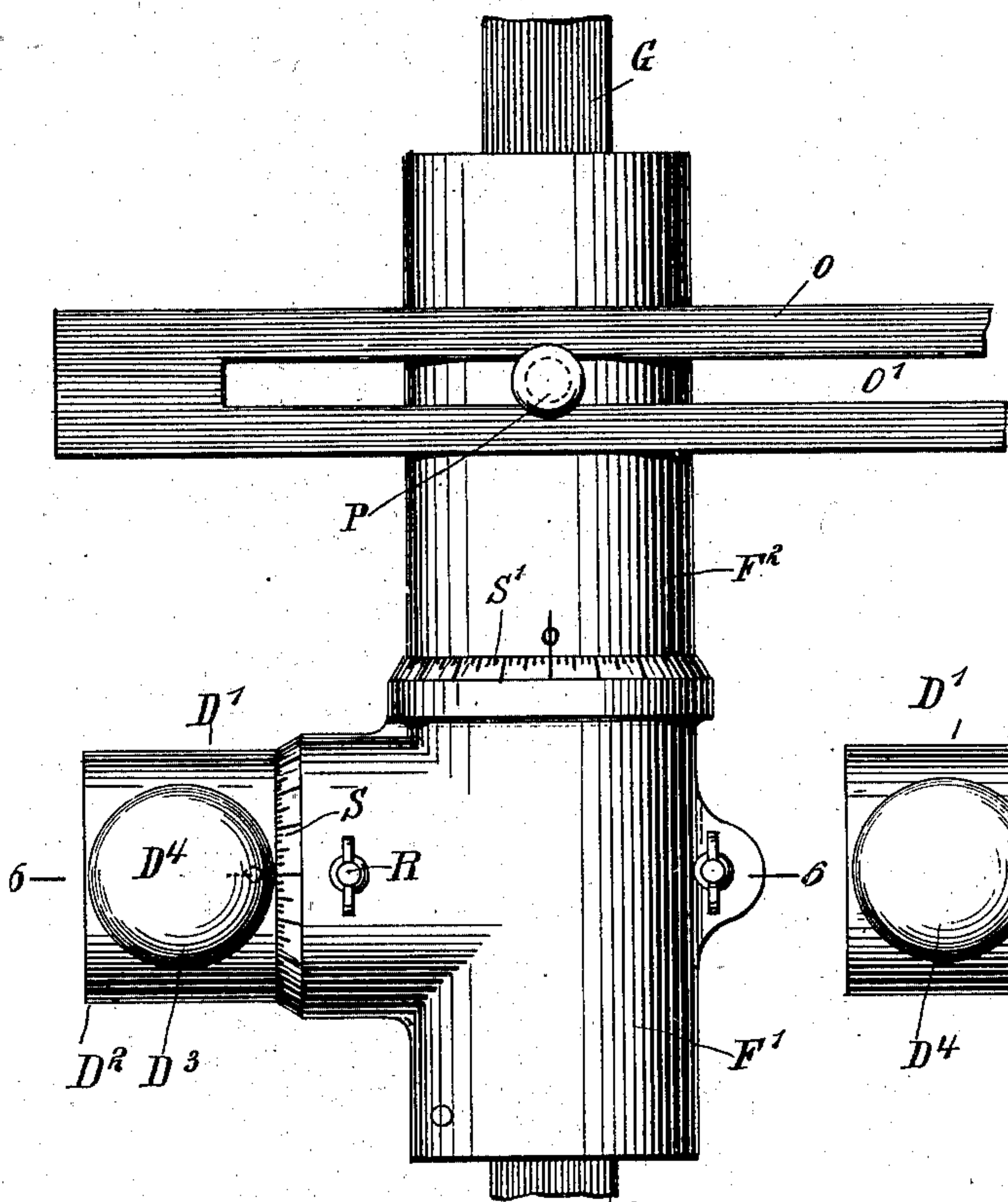


Fig. 4.

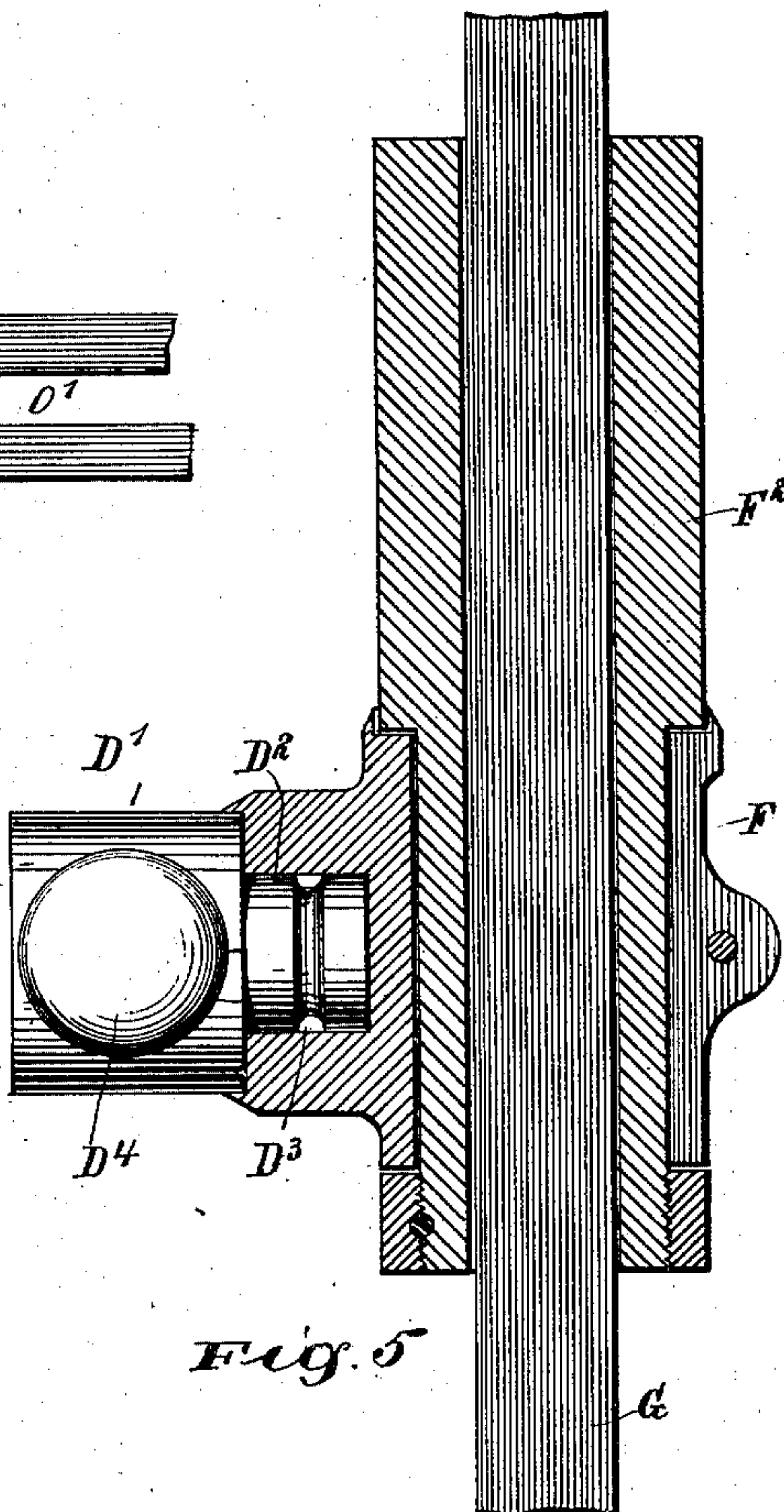


Fig. 5.

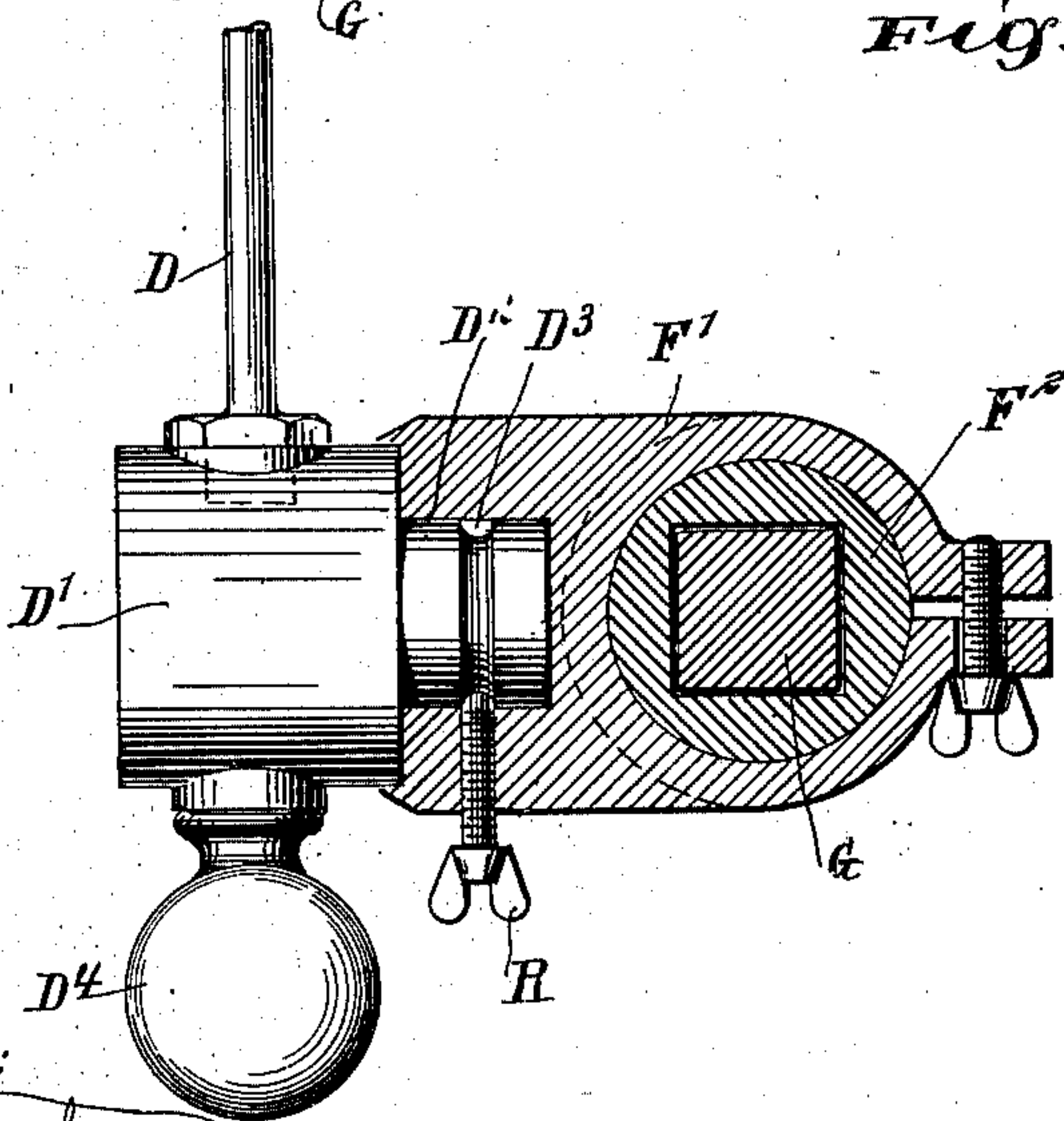


Fig. 6.

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UNITED STATES PATENT OFFICE.

ATTILIO STIRIA, OF NEW YORK, N. Y.

CARVING AND ENGRAVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,985, dated January 29, 1901.

Application filed March 8, 1900. Serial No. 7,850. (No model.)

To all whom it may concern:

Be it known that I, ATTILIO STIRIA, a subject of the King of Italy, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Carving and Engraving Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved reproducing-machine designed for carving wood or the like and arranged to reproduce a piece of work according to a given pattern, but of different proportion, the machine being very simple and durable in construction, very effective in operation, and easily manipulated and set by the operator, according to the work in hand.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the improvement. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged front elevation of a modified form of the tracer-slide and adjacent parts. Fig. 5 is a sectional front view of the same, and Fig. 6 is a sectional plan view of the same on the line 6 6 in Fig. 4.

The improved reproducing-machine is provided with a board A, preferably set in a vertical position and fastened to a floor, wall, or other support, and on the face of the board A, near the lower end thereof, is secured a pattern B of the work to be reproduced on a block C of wood, stone, or other material, secured by a clamping-screw C' to the face of the board A above the pattern B. The latter is secured in position by a clamping-screw B', and said clamping-screws C' and B' extend in a vertical slot A', formed in the board A, a graduation A² being on said board A at one side of the slot.

On the pattern B works a tracer D, and a carving-tool E operates on the block C, the said tracer D being secured on a slide F, adjustably held on a rod G, on which is also ad-

justably held a second slide H, in which is mounted to turn the carving-tool E. The carving-tool E is rotated either by a suitable motor directly carried on the slide H, or the tool is provided with a pulley E', connected by a belt E² with suitable machinery for imparting a rotary motion to said tool; but other suitable devices may, however, be employed for giving the desired rotation to the tool E. The rod G acts as a guide for the slides and forms also one side of a triangular frame which is hung at its upper end on a universal joint I, so as to permit of moving the rod and frame in any desired direction. This allows the tracer D to follow the pattern B at its depressions and elevations, so as to reproduce corresponding depressions and elevations on the block C by means of the tool E. The universal joint I is constructed of a T-shaped member having a forwardly-projecting rod or shank I', Fig. 3, on which the triangular frame is hung to swing sidewise, while on the rear end of the rod or shank I' are formed right-angular conical pins I² I², hung on centers in a yoke I³, having eyes I⁴, mounted to slide on parallel studs J J, carried by the board A.

The length of the tracer D and that of the tool E corresponds to the distance between the eye of the rod G and the center of the pin I², (see Fig. 2,) and in order to allow of using different length tools according to the depth of the work to be done said rod G is adjustably held on the rod I', and for this purpose a set-screw L is provided screwing in a projection L', carried by the rod I', the screw engaging the top of the eye of the rod G, as indicated in Figs. 2 and 3.

The bearings of the yoke I³ are connected with each other by an arm I⁵, Fig. 3, engaged by a screw-rod K, screwing in a nut K', secured to the back of the board A, said screw-rod extending loosely through an opening in said board. By turning the screw-rod K the universal joint I can be readily moved bodily forward or backward to bring the tracer D and the tool E in proper relation, respectively, to the pattern B and the block C.

The slide F is moved by hand to cause the tracer D to follow the configuration on the face of the pattern B, and in order to impart a corresponding movement to the slide H the

following device is provided. On the rod G are secured angular arms G^1 G^2 for forming, with the rod G, the triangular frame, as is plainly indicated in Fig. 1, and at the junction of the arms G^1 G^2 is held a pivot N for a graduated bar O, having a slot O^1 , engaging a pin P, carried by the slide F. The slide H, carrying the tool E, is connected with the bar O at a point between its pivot and the slide F by an extensible link Q, having members Q^1 Q^2 Q^3 , of which the member Q^1 is pivotally connected with the slide H and slides in the member Q^3 , and the other member Q^2 is pivotally connected with a block Q^4 , adapted to be secured in place on the bar O by a clamping-screw Q^5 , extending in the slot O^1 . Set-screws Q^6 serve to fasten the members Q^1 and Q^2 in place on the member Q^3 after the desired adjustment is once made, according to the position of the work C and on the pattern B. The graduation O^2 on the bar O adjacent to the slot O^1 is arranged relatively to the graduation A^2 —that is, the distance from the center of the universal joint I to the bottom of the pattern B is divided into as many parts on the graduation A^2 as are contained in the distance between the center N and the pin P on the slide F and marked on the graduation O^2 . Thus when the work C, for instance, is set with its center on the mark "3" of the graduation A^2 then the block Q^4 is moved to the corresponding mark "3" on the graduation O^2 , and then the block Q^4 is fastened in place and the members Q^1 and Q^2 are secured in position by the set-screws Q^6 in the member Q^3 . When the tracer D is moved up or down on the pattern B, it is evident that a corresponding movement is given to the slide H and the tool E by the action of the graduated bar O and the link Q, and the inward and outward movement given to the tracer D in following the depressions and rises on the pattern B causes a like inward and outward movement of the tool E, owing to the swinging of the rod G from its universal joint, and consequently an exact reproduction, but of a reduced size, is made on the block C of the configuration on the face of the pattern B.

From the foregoing it is evident that the operator can readily move the tracer D over the pattern, as the universal joint of the frame carrying the tracer and the tool E allow such movement, and as the slide H moves in accordance with the movement given by the operator to the slide F it is evident that an exact reproduction of the pattern is made on the face of the block C.

In order to make undercuts and the like, it is necessary to allow of setting the tracer D at different angles relatively to the pattern B and to set the tool E correspondingly relatively to the work-block C. For this purpose I provide the arrangement shown in Figs. 4, 5, and 6, which illustrates the tracer D and slide F, it being understood that the tool E is similarly mounted in the slide H.

The tracer D is held in a head D^1 , having a reduced portion D^2 , mounted to turn in a socket formed on the sleeve F^1 , mounted to turn and adapted to be clamped on a slide F^2 , fitted to slide on the rod G of the frame, and in said reduced portion is arranged an annular groove D^3 , engaged by a screw R, to hold the head D^1 from accidental displacement on the sleeve and to allow of clamping the head in a fixed position relatively to the sleeve F^1 after adjustment is made—that is, after the head D^1 , and with it the tracer D, is turned to the desired angle. As the sleeve F^1 can also be turned on the slide F^2 the tracer can be moved to any desired position relatively to the pattern, and micrometer-graduations SS^1 are formed on the sleeve F^1 to permit of correctly setting the tracer to the desired position, as will be readily understood by reference to Fig. 4. The head D^1 is provided with a suitable handle D^4 for conveniently turning the head when setting the tracer and for conveniently sliding the slide F^2 on the rod G, as before explained.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine for reproducing carvings and delineations, comprising a swinging frame hung at one end on a universal joint and having a radially-arranged guide, two slides arranged to be adjusted in line upon said guide and carrying respectively the tracer and reproducer-tool, a graduated arm pivoted to said frame on one side of the line of movement of the slides on said guide, and having an adjustable connection with the tracer-slide, and an extensible link adjustably connected at one end to said graduated arm at a point between the pivot of said arm and its connection with the tracer-slide and connected at the other end to the reproducer-slide substantially as described.

2. A machine for reproducing carvings and delineations, comprising a triangular frame hung at one apex on a universal joint and having upon one of its sides two rectilinearly-moving slides carrying respectively the tracer and reproducer-tool, a graduated arm pivoted to another apex of the triangular frame and adjustably connected to the tracer-slide, and an extensible link adjustably connected at one end to the graduated arm at a point between its pivot and the tracer-slide, and connected at its other end to the reproducer-slide substantially as and for the purpose described.

3. In a machine for reproducing carvings and delineations, the combination with the swinging frame carrying the adjustable tracer and reproducing-tool; of a universal joint supporting said frame consisting of a T-shaped member having conical pins forming one pivotal axis and having for the other axis a shank portion forming the support for the swinging frame, means for adjusting said swinging frame along said shank portion, and

means for supporting the conical pivots substantially as described.

4. In a machine for reproducing carvings and delineations, the combination with the swinging frame carrying the adjustable tracer and reproducing-tool; of a universal joint supporting said frame consisting of a T-shaped member having conical pins forming one pivotal axis and a shank portion which forms the support for the swinging frame and the other axis, a yoke-piece for sustaining the conical pivots, said yoke-piece having perforated ends and parallel supporting-studs passing through said perforated ends substantially as described.

5. In a machine for reproducing carvings and delineations, a frame-plate having a graduated slot, a support for the pattern and a support for the work and means for mounting and adjusting them in said slot, a swinging frame hung at one end upon a universal joint and having a radial guide with slides mounted on the same carrying the tracer and reproducer-tool, a graduated arm pivoted to one side of the radial guide and adjustably connected to the tracer-slide, and an extensi-

ble link adjustably connected at one end to the graduated arm at a point between its pivot and the tracer-slide and connected at its other end to the reproducer-slide substantially as described.

6. In a machine for reproducing carvings and delineations, the combination with the guide-rod G; of a slide mounted thereon, a sleeve clamped upon said slide and having a rotary adjustment thereon with circular graduations at the joint between the sleeve and slide, and a tool-head carrying a tool, said head having a reduced portion entering the sleeve at its side and retained therein for a swiveling connection and having circular graduations between the sleeve and the tool-head, and means for fixing this swiveling adjustment substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ATTILIO STIRIA.

Witnesses:

ENRICO M. FRANCHI,
GIOVANNI OVITINO.